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fernando.borrego@basf.com
marjorie.ellis@basf.com
ipdocket@h2law.com

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte KATRINA SCHMIDT, CHRIS JANZEN,
GREG GARDIN, and CHRIS LACARTE

Appeal 2009-004564
Application 10/644,450
Technology Center 1700

Decided: March 30, 2010

Before CHUNG K. PAK, CHARLES F. WARREN, and PETER F. KRATZ,
Administrative Patent Judges.

KRATZ, *Administrative Patent Judge.*

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 from the Examiner's final rejection of claims 26, 28, 29, 31, 34, 36-39, 41, 42, and 44. We have jurisdiction pursuant to 35 U.S.C. § 6.

Appellants' claimed invention is directed to polyurethane foam useful for insulating structures and a method of making same. The foam is the reaction product of a resin component and a diphenylamine diisocyanate component. The resin component includes several specified polyols, a polyether amine curing component, and a blowing agent. The volumetric ratio of the resin and isocyanate components is such that an isocyanate index of from 25 to 60 results. The foam product is open celled and has a density less than 1 pound per cubic foot.

Claims 26 and 39 are illustrative and reproduced below:

26. A polyurethane foam for insulating structures that is produced from a polyurethane spraying system, said polyurethane foam being the reaction product of:

a) a resin component comprising;

a blowing agent present in an amount of from 15 to 40 parts by weight based on 100 parts by weight of said resin component,

a first polyol used in an amount of from 5 to 25 parts by weight based on 100 parts by weight of said resin component and having a number-average molecular weight of from 150 to 500 and having a hydroxyl number of from 250 to 1000 and having at least tetra-functionality,

a second polyol having a number-average molecular weight of from 3500 to 8000 and having a hydroxyl number of from 20 to 100 and having terminal hydroxyl groups, and

a curing component used in an amount of from 2 to 15 parts by weight based on 100 parts by weight of said resin component and comprising a polyether amine having at least one primary amine group, an equivalent hydroxyl number of from 20 to 800, and having a number-average molecular weight of from 150 to 5000, and

b) an isocyanate component comprising diphenylmethane diisocyanate;

wherein said a) and b) are reacted in a volumetric ratio having an isocyanate index of from 25 to 60; and

wherein said polyurethane foam is open-celled and has a density of less than 1 pound per cubic foot and low water absorption as a result of reacting said a) and b) in said volumetric ratio at said isocyanate index.

39. A method of forming a polyurethane foam for insulating structures dispensed from a polyurethane spraying system, said method comprising the steps of:

providing a) a resin component including a blowing agent present in an amount of from 15 to 40 parts by weight based on 100 parts by weight of said resin component, a first polyol present in an amount of from 5 to 25 parts by weight based on 100 parts by weight of said resin component and having a number-average molecular weight of from 150 to 500, having a hydroxyl number of from 250 to 1000, and having at least tetra-functionality, a second polyol having a number-average molecular weight of from 3500 to 8000, having a hydroxyl number of from 20 to 100, and having terminal hydroxyl groups, and a curing component present in an amount of from 2 to 15 parts by weight based on 100 parts by weight of said resin component and comprising a polyether amine having at least one primary amine group, an equivalent hydroxyl number of from 20 to 800, and having a number-average molecular weight of from 150 to 5000,

providing b) an isocyanate component comprising diphenylmethane diisocyanate; and

reacting a) and b) in a volumetric ratio of from 1:1.2 to 1:3 such that a) and b) are reacted having an isocyanate index of from 25 to 60 such that the polyurethane foam is open-celled and has a density of less than 1 pound per cubic foot and low water absorption as a result of reacting a) and b) in the volumetric ratio at the isocyanate index.

The Examiner relies on the following prior art reference as evidence in rejecting the appealed claims:

Spitzer

5,340,900

Aug. 3, 1994

Claims 26, 28, 29, 31, 34, 36-39, 41, 42, and 44 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Spitzer.

We reverse.

A principal issue before us is:

Has the Examiner established that one of ordinary skill in the art would have been led to employ an isocyanate index outside the index value range taught by Spitzer and an appropriate blowing agent amount so as to arrive at a product foam having the characteristics of a foam made with an isocyanate ratio and having a density as claimed by Appellants based on the teachings of Spitzer?

We answer this question in the negative.

Spitzer is directed to forming shaped polyurethane articles using low molecular weight polyols and long chain polyamines and polyisocyanate, such as diphenylmethane using non-heated molds. Casting or a mold curing technique is employed to form the shaped articles.

The Examiner acknowledges that the appealed claims require a foam, or method of making same, that differs from Spitzer's teachings in several respects, including, *inter alia*, that Spitzer does not exemplify making polyurethane foam resulting from the use of the claimed isocyanate index and forming foam with the claimed density (Ans. 4; see e.g., independent claims 26 and 39).

In this regard, Spitzer (col. 7, lines 55-63) discloses that

The reaction mixtures according to the invention comprise the polyisocyanate in the customary amount, in general corresponding to an isocyanate number (quotient of the number of isocyanate groups and the number of groups which can react with isocyanate groups in the reaction mixture, multiplied by 100) of between 70 and 130, preferably corresponding to an isocyanate number of between 90 and 110. A primary amino group here again corresponds to a hydroxyl group.

The Examiner maintains that:

Spitzer et al. discloses the employment of customary reactive ratios in the operation of its invention for the purpose of achieving their disclosed reactive effects (see again column 7 lines 55-63). Accordingly, it would have been obvious for one having ordinary skill in the art to have operated at other customary Index values within the accommodations of Spitzer et al. beyond the exemplified ranges of Index values highlighted by Spitzer et al. for the purpose of controlling well known impacts on properties of the finally realized products, such as hardness and elongation, in order to arrive at the products and processes of appellants' claims with the expectation of success in the absence of a showing of new or unexpected results.

Ans. 4.

The difficulty we have with the Examiner's obviousness position is that the Examiner has not proffered any persuasive evidence to support the Examiner's contention that an ordinarily skilled artisan would have looked outside the customary isocyanate index values (70-130) taught by Spitzer and employed other values, such as an index value as claimed by Appellants, with the expectation of positively controlling properties of the shaped articles taught by Spitzer that would have been desirable.

After all, it is well settled that the burden of establishing a prima facie case of non-patentability resides with the Examiner. See *In re Piasecki*, 745 F.2d 1468, 1472 (Fed. Cir. 1984). In this regard, a sustainable obviousness rejection must be accompanied by “some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (quoted with approval in *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007)).

As argued by Appellants, the Examiner has not shown that Spitzer is directed to the type of foam product, such as an insulation material, with a density as claimed, as Appellants are concerned with (App. Br. 11). Nor has the Examiner established that one of ordinary skill in the art interested in making a shaped article formed in a mold or by casting, as Spitzer is drawn to, would have adjusted reaction parameters to obtain a density as claimed and a product reflecting the claimed isocyanate index (App. Br. 11-12; Reply Br. 5-7).

In this regard, the Examiner seemingly speculates in asserting that:

Though the ordinary practitioner may be hindered in relying on lowered Index values to address all elasticity and mechanical strength needs due to concerns with inadequate product formation arising from excessive amounts of unreacted isocyanate reactive materials in formed products, balancing and optimizing these known effects associated with reducing Index values would only involve routine experimentation from what is taught or fairly disclosed by the teachings of Spitzer et al.

Ans. 7.

However, rejections based on § 103(a) must rest on a factual basis, not speculation, with the facts being interpreted without hindsight reconstruction of the invention from the prior art. See *In re Warner*, 379 F.2d 1011, 1017

(CCPA 1967). Here, in contrast to that basic premise, the only direction to the claimed subject matter apparent to us on this appeal record is furnished by Appellants' Specification. Consequently, we conclude that the Examiner's rejection is premised on impermissible hindsight.

ORDER

The Examiner's decision to reject claims 26, 28, 29, 31, 34, 36-39, 41, 42, and 44 under 35 U.S.C. § 103(a) as being unpatentable over Spitzer is reversed.

REVERSED

PL Initial:
sld

BASF AKTIENGESELLSCHAFT
CARL-BOSCH STRASSE 38, 67056 LUDWIGSHAFEN
LUDWIGSHAFEN 69056 DE GERMANY